WHAT IS CLAIMED IS:

1. A combustion method for NO_x reduction, comprising in combination the steps of:

a first NO_x reduction step for suppressing generated NO_x value to 60 ppm or under (at 0% O_2 in exhaust gas, dry basis) by a low NO_x burner;

a second NO_x reduction step for recirculating exhaust gas of the low NO_x burner to a burning reaction zone formed by the low NO_x burner; and

a third NO_x reduction step for adding water or steam to the burning reaction zone.

2. A combustion method for NO_x reduction as claimed in claim 1, wherein the third NO_x reduction step is performed by spraying water directly to the burning reaction zone.

3. A combustion method for NO_x reduction as claimed in claim 1, wherein the second NO_x reduction step is performed with a target exhaust NO_x value set to 30 ppm or under (at 0% O_2 in exhaust gas, dry basis) and with an exhaust-gas recirculation quantity set in a stable combustion range of the low NO_x burner, and any NO_x value exceeding the target exhaust NO_x value is reduced by the third NO_x reduction step.

4. A combustion method for NO_x reduction as claimed in claim3, wherein the third NO_x reduction step is

performed by spraying water directly to the burning reaction zone.

5. A combustion apparatus for NO_x reduction, comprising:

a low NO_x burner for suppressing generated NO_x value to 60 ppm or under (at 0% O_2 in exhaust gas, dry basis);

exhaust gas recirculation means for recirculating exhaust gas of the low NO_x burner to a burning reaction zone formed by the low NO_x burner; and

water or steam addition means for adding water or steam to the burning reaction zone.

6. A combustion apparatus for NO_x reduction, comprising:

a low NO_x burner for suppressing generated NO_x value to 60 ppm or under (at 0% O_2 in exhaust gas, dry basis);

exhaust gas recirculation means for recirculating exhaust gas of the low NO_x burner to a burning reaction zone formed by the low NO_x burner; and

water spraying means for spraying water directly to the burning reaction zone.